



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/659,377	09/07/2000	Eric B. Johansson	1585-280	5947

7590 02/25/2003

Nixon & Vanderhye PC
1100 North Glebe Road
8th Floor
Arlington, VA 22201-4714

EXAMINER

BEHREND, HARVEY E

ART UNIT

PAPER NUMBER

3641

DATE MAILED: 02/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

02/25/2003 14:00:00

Office Action Summary

Application No. 09/659377	Applicant(s) Johansson et al
Examiner B. Grend	Group Art Unit 3681

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 10/15/01
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 15, 16, 20, 22-44, 107-109 is/are pending in the application.
- ☐ Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 15, 16, 20, 22-44, 107-109 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____
- ☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 6
- ☐ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 15, 16, 20, 35-44, 107, 109 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no support in the original disclosure for reciting that the means for restoring pressure drop, is positioned adjacent just one part length fuel rod.

There is no support in the original disclosure for stating that the means for restoring pressure drop is located in the "interstitial volumes between fuel rod cells" (the specification on col. 5 lines 2-4 refers instead to the interstitial volumes between fuel rods).

3. Claims 15, 16, 20, 35-44, 107, 109 are rejected under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows:

The recitation that the means for restoring pressure drop, is positioned adjacent just one part length fuel rod.

Art Unit: 3641

There is no support in the original disclosure for stating that the means for restoring pressure drop is located in the "interstitial volumes between fuel rod cells" (the specification on col. 5 lines 2-4 refers instead to the interstitial volumes between fuel rods).

4. Claims 15, 16, 20, 35-44, 107-109 are rejected under 35 U.S.C. 251 as being broadened in a reissue application filed outside the two year statutory period. A claim is broader in scope than the original claims if it contains within its scope any conceivable product or process which would have infringed the original patent. A claim is broadened if it is broader in any one respect even though it may be narrower in other respects.

Reciting that the means for restoring pressure drop, is positioned adjacent just one part length fuel rod broadens the claims.

Reciting that spacers from the second group of spacers can be at locations other than above the part length rod broadens the claims.

New claim 108 is broader than the original claims as it merely recites the presence of "an additional spacer" without positively and specifically reciting the difference in vertical distribution between the spacers of the second group as compared to the vertical distribution between the spacers of the first group (it is noted that the content of the "thereby" clause does not inherently follow from the actual structure recited).

5. Claims 15, 16, 20, 35-44, 107-109 are rejected under 35 U.S.C. 251 as being improperly broadened in a reissue application made and sworn to by the assignee and

not the patentee. A claim is broader in scope than the original claims if it contains within its scope any conceivable product or process which would have infringed the original patent. A claim is broadened if it is broader in any one respect even though it may be narrower in other respects.

Reciting that the means for restoring pressure drop, is positioned adjacent just one part length fuel rod broadens the claims.

Reciting that spacers from the second group of spacers can be at locations other than above the part length rods broadens the claims.

New claim 108 is broader than the original claims as it merely recites the presence of "an additional spacer" without positively and specifically reciting the difference in vertical distribution between the spacers of the second group as compared to the vertical distribution between the spacers of the first group (it is noted that the content of the "thereby" clause does not inherently follow from the actual structure recited).

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

Art Unit: 3641

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 15, 16, 107, 109 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Japan 1-176986.

The claimed means for restoring at least some of the decreased pressure drop, reads on the "thicker" spacer grid, as well as on the vanes (e.g. note the vane 20 in Fig. 6 which is not directly above the part length rod).

Patent Owner admits on page 20 of the 9/6/00 response in Re-exam 90/005098 that the reference shows spacers above the part length rods with relatively larger wall thickness and downwardly directed projections.

It is noted that even Patent Owners specification on col. 5 lines 11+ states that one of his means for increasing the pressure drop, is the use of spacers with larger wall thickness.

Art Unit: 3641

Since the reference illustrates an expedient that is identical to Patent Owner's, this system of the reference must also inherently function in the same manner to produce the same results as that recited in the claims.

As to limitations which are considered to be inherent in a reference, note the case law of In re Ludtke, 169 USPQ 563, In re Swinehart, 169 USPQ 226, In re Fitzgerald, 205 USPQ 594, In re Best et al, 195 USPQ 430 and In re Brown, 173 USPQ 685, 688.

9. Claims 15, 16, 20, 22-44, 107-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 1-176986 in view of Leclercq.

The primary reference has been discussed above.

The secondary reference also shows a fuel assembly structure having thicker grids in the upper portion of the fuel assembly and with these grids having fins 40 at each of the interstices. The secondary reference also shows it is old and advantageous to also have the grids be spaced closed together in the upper portion of the fuel assembly (e.g. see Fig. 1A).

According, it would have been prima facie obvious to have modified the primary reference by having vanes at each of the interstices of the upper grids or even the thicker upper grids or decreased spacing between the upper grids as shown to be old by the secondary reference, because such merely makes use of conventionally known alternatives.

Note that the advantageous use of seven or more spacers and, the upper grid being of inconel with no fins, the upper grids being of increased length is also shown to

Art Unit: 3641

be well known and conventional expedients in the art, as shown for example by Fig. 1, Fig. 1A, col. 2 lines 22+, col. 4 lines 6+, col. 6 lines 12+ of Leclercq and, to so modify the primary reference would accordingly have been prima facie obvious.

While the claimed swirl vanes are considered as reading on the vanes 40, the use of vanes formed of twisted elements for imparting a swirl to the coolant, are conventionally known art alternatives and hence prima facie obvious.

Note that the use in the primary reference of 8x8, 9x9 or 10x10 matrices, up to 12 part length rods, part length rods of differing lengths, etc., would have been obvious on its face as it merely makes use of conventionally known alternatives.

The examiner has relied on Leclercq for a showing that several various expedients are well known to be old and advantageous in the nuclear reactor fuel assembly art. These advantages remain irregardless of whether the fuel assembly is utilized in a PWR or a BWR and, whether or not the fuel assembly includes part length fuel rods, and, they provide a proper basis for combining the teachings of the references in the manner set forth by the examiner.

10. Claims 15, 16, 20, 22-44, 107-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 1-176986 in view of Leclercq as applied to claims 15, 16, 20, 22-44, 107-109 above, and further in view of any of Thomazet et al (4804516), Japan 2192690, Japan 3149592, Japan 1138493 or Japan 2-126388.

Thomazet et al show a fuel assembly similar to that of Leclercq wherein the grids are spaced closer together in the upper region, the upper grids (except for the uppermost grid) containing fins at the interstices and, wherein the upper grids have a

Art Unit: 3641

greater length than the lower grids (e.g. see col. 2 lines 55+, col. 3 lines 8+, col. 4, lines 32+, the height of the spacer in Fig. 5 versus the height of the spacer in Fig. 9).

Note particularly that Thomazet et al in col. 1 lines 18+ states that the teachings thereof, while particularly suitable, are not exclusively for PWR fuel assemblies. This provides an additional teaching that the expedients utilized in Thomazet et al (and hence Leclercq) are suitable for use in other water cooled reactors, e.g. a BWR).

The secondary references of either Japan 3149592 or Japan 2192690 (both directed to a BWR) shows that it is old and advantageous in the art and hence obvious to have the spacers closer together at the top of the fuel bundle (and in this sense, they are each similar to the teachings in Thomazet et al).

The secondary reference of Japan 1138493 (a BWR) likewise shows that it is old and advantageous and hence obvious for the fourth and fifth spacers in a seven spacer fuel bundle to have flow tabs for high mixing of coolant.

The secondary reference of Japan 2126388 (a BWR) likewise shows it is old and advantageous and hence obvious for spacers in the middle portion of the fuel bundle to be of greater height (note Fig. 3) and, that the same effect of the use of spacers of greater height can also be obtained by the use of spacers of greater thickness.

11. Claims 15, 16, 20, 22-44, 107-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 1-176986 in view of Leclercq as applied to claims 15, 16, 20, 22-44, 107-109 above, and further in view of any of Orii et al (5112571), Hatfield or Buettiker.

Art Unit: 3641

While the use of swirl type vanes in the primary reference is considered obvious as set forth above, the use in this art of swirl type vanes is even more clearly shown by the secondary references of any of Orii et al, Hatfield or Buettiker.

Accordingly, it would in any event, have been prima facie obvious to have utilized swirl type vanes in the primary reference in view of the teachings in any of Orii et al, Hatfield or Buettiker that such vanes are conventionally known alternatives in this art.

12. Claims 15, 16, 20, 22-44, 107-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 1-176986 in view of Leclercq and any of Thomazet et al, Japan 2192690, Japan 1138493, or Japan 3149592 as applied to claims 15, 16, 20, 22-44, 107-109 above, and further in view of any of Orii et al, Hatfield or Buettiker, for the reasons set forth in section 11 above.

13. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 1-176986 in view of Leclercq and any of Thomazet et al, Japan 2192690, Japan 1138493 or Japan 3149592 as applied to claims 15, 16, 20, 22-44, 107-109 above, and further in view of any of Dix et al (5017332), Ogiya et al (4968479), Wolters et al (5164155) or Ueda et al (5068082).

It would have been prima facie obvious to have the part length rods in the primary reference be of differing lengths, in view of the teaching in Dix et al (note col. 5 lines 29+), Wolters et al (Fig. 2), Ogiya et al (note Fig. 24) or Ueda et al (note Fig. 25A) that such is a conventionally known and advantageous expedient in this art.

Art Unit: 3641

Note also the teachings of flow control members 62 and fins 63 in cols. 20, 21, and Figures 47, 48, 52-54 of Ueda et al.

Note also the teachings of a 10x10 array in Wolters et al.

14. Claims 15, 16, 22-34, 107-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 1-176986 in view of either Japan 2192690 or Japan 3149592.

The references have all been discussed above. All references illustrate BWR fuel bundles. It would have been prima facie obvious of have modified the primary reference by having the spacers closer together in the upper portion of the fuel bundle, as shown to be old and advantageous in this art by either secondary reference.

Note that the use in the primary reference of 8x8, 9x9 or 10x10 matrices, up to 12 part length rods, part length rods of differing lengths etc., would have been obvious on its face as it merely makes use of conventionally known alternatives.

15. Claims 15, 16, 20, 35-44, 107 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 1-176986 in view of Japan 1138493 alone or in view of any of Orij et al, Hatfield or Buettiker.

All references have been discussed above. Note that Japan 1138493 (in a manner similar to the primary reference) shows the use of flow tabs on specified grids to promote high mixing. It would have been prima facie obvious to have utilized such flow tabs in the primary reference to obtain the high mixing referred to in Japan 1138493.

While Japan 1138493 may not clearly illustrate the flow tabs, it would have been obvious on its face to have utilized such tabs in the form of swirl vanes because such

Art Unit: 3641

represents no more than the use of conventional known and advantageous alternatives (see any of Orii et al, Hatfield or Buettiker).

16. Applicant is reminded of the continuing obligation under 37 CFR 1.178(b), to timely apprise the Office of any prior or concurrent proceeding in which Patent No. 5229068 is or was involved. These proceedings would include interferences, reissues, reexaminations, and litigation.

Applicant is further reminded of the continuing obligation under 37 CFR 1.56, to timely apprise the Office of any information which is material to patentability of the claims under consideration in this reissue application.

These obligations rest with each individual associated with the filing and prosecution of this application for reissue. See also MPEP §§ 1404, 1442.01 and 1442.04.

17. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features of claim 30 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

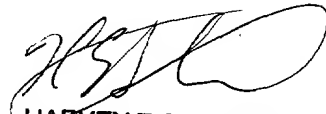
18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harvey Behrend whose telephone number is (703) 305-1831. The examiner can normally be reached on Tuesday to Friday.

Art Unit: 3641

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone, can be reached on (703) 306-4198. The fax phone number for the organization where this application or proceeding is assigned is (703) 306-4195.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

Behrend/kl
February 10, 2003



HARVEY E. BEHREND
PRIMARY EXAMINER